

Noise-Induced Hearing Loss in Construction

Each year, thousands of construction workers suffer increased hearing loss from noise exposure on the job. Hearing loss impairs quality of life on and off the job, but it can also increase the risk of injuries – for instance, when a worker cannot hear approaching vehicles or warning signals.

Workers' compensation data from British Columbia, in Canada, show that the amount of hearing lost by construction workers is strongly associated with the length of time worked in construction (charts 43a and 43b). After 16 to 25 years on the job, on average, a construction laborer or equipment operator has the hearing of someone about 20 years older who has had no workplace exposure to noise. The British Columbia study found that carpenters, truck drivers, electricians, and welders also had considerable hearing losses.

Noise-induced hearing loss begins at higher frequencies (4,000 Hertz and above) and thus may first affect the ability to hear high-pitched sounds, such as women's and children's voices (especially on the telephone). With increasing exposure, the high-frequency hearing losses become more severe and losses occur in the normal-speech range (3,000 Hertz and below).

Studies in Sweden comparing construction workers and office workers from the construction companies show construction workers lose much more hearing than office workers in each age group, which means the losses likely result from work-related exposures to noise. (No data were available for comparison with other types of workers.)

The Swedish data, based on more than a million hearing tests over a 16-year period, show that, in 1974, by age 41, only about 20% of construction workers still had normal hearing in both ears when compared to office workers of the same age (chart 43c). By age 50, only about 7.5% had normal hearing in both ears.

By 1990, several years after the Swedish construction industry started a comprehensive hearing-conservation program, the proportion of 41-year old construction workers with normal hearing in both ears rose to 32%, an increase of 65%.

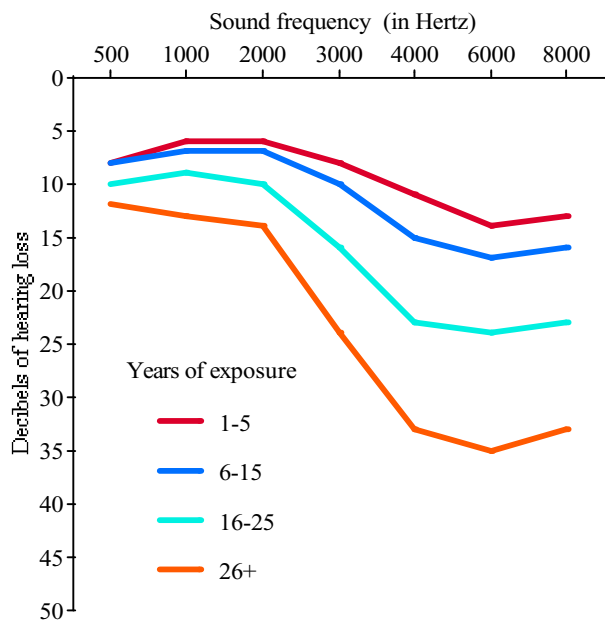
In the United States, OSHA requirements for comprehensive hearing conservation programs do not apply to construction. There has been little information available on hearing loss among construction workers in the United States.

To determine whether current and former construction workers are at significant risk for occupational illnesses as a result of having worked at the Department of Energy's (DOE) nuclear weapons facilities, a research consortium led by the Center to Protect Workers' Rights and the University of Cincinnati Medical Center started three pilot surveillance programs in 1996 and 1997 at the Hanford Nuclear Reservation, in Washington state; Oak Ridge, in Tennessee; and the Savannah River Site, in South Carolina. The workers who were examined were about 58 years old and had worked in construction for 23 years, on average.

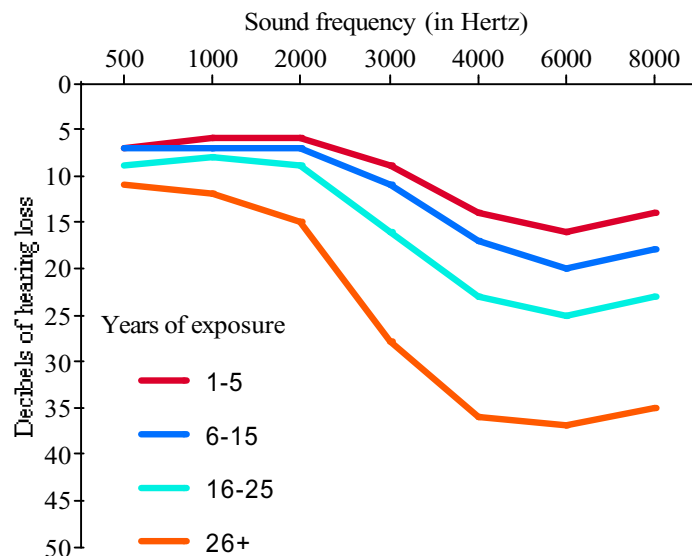
This study included an evaluation of hearing loss of 2,375 DOE construction workers. It found that 60.3% of workers examined have significant hearing loss as a result of work-related noise. The study used the 1998 NIOSH criteria of a significant threshold shift (hearing loss) of 15 decibels at 1,000, 2,000, 3,000, 4,000, 5,000, or 6,000 Hertz in either ear to determine abnormal hearing loss.¹ Although more than 60% of the workers experienced hearing loss, the amount of hearing loss varies by occupation. Plumbers, ironworkers, millwrights, carpenters, operating engineers, and electricians appear to have experienced the most hearing loss (chart 43d). The percentage of workers with hearing loss increases greatly by age, but even 9% of workers under age 35 have evidence of hearing loss, and by age 50, half of all workers experience hearing loss.

1. National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. *Criteria for a Recommended Standard: Occupational Noise Exposure*. Cincinnati, OH: DHHS (NIOSH), Pub. 98-126, 1998.

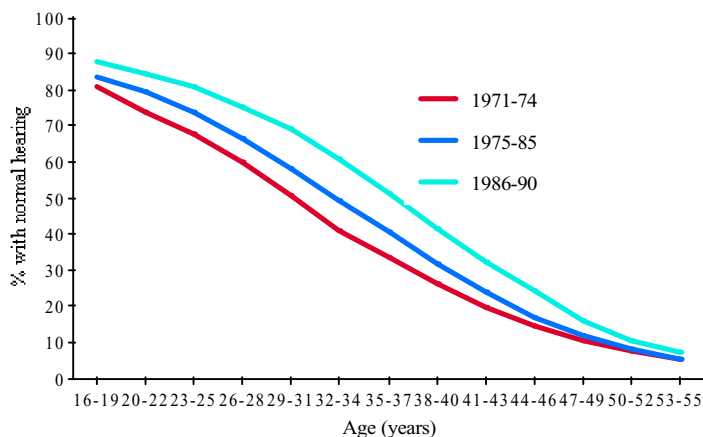
43a. Amount of hearing loss among construction laborers in British Columbia, by sound frequency, 2000
(By number of years worked in construction)



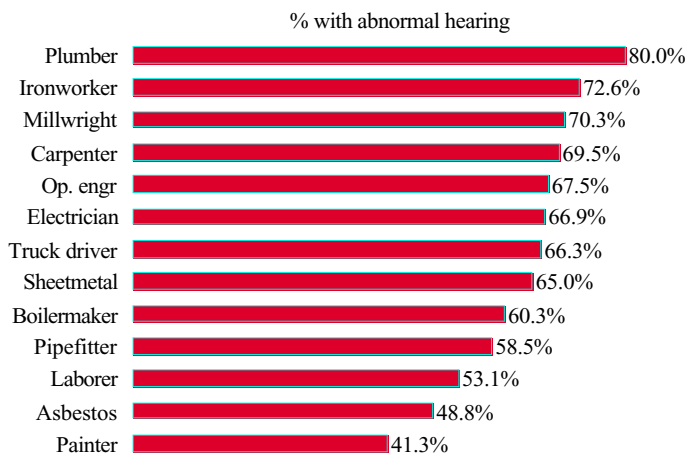
43b. Amount of hearing loss among construction equipment operators in British Columbia, by sound frequency, 2000
(By number of years worked in construction)



43c. Prevalence of normal hearing (both ears) in Swedish construction workers, 1974-90



43d. Noise-induced hearing loss, by trade, U.S. Department of Energy construction workers, 1997-2002



Note: Chart 43a – Based on 9,377 workers.

Chart 43b – Based on 5,931 workers.

Chart 43c – Based on 134,000 examinations in 1974, then about 55,000 exams per year through 1990, a total of about 1 million exams.

Chart 43d – Based on results from 25 or more examinations per trade (total of 2,375 DOE construction workers). Millwrights install, repair, replace, and dismantle the machinery and heavy equipment used in almost every industry.

Source: Charts 43a and 43b – Heather Gillis, British Columbia Workers' Compensation Board, personal communication, March 2002.

Chart 43c – Göran Engholm, Bygghälsan, personal communication, 1994. Bygghälsan was the Swedish Construction Industry Organization for Working Environment, Occupational Safety, and Health. Because of cutbacks beginning in 1992 throughout the Swedish economy, more-recent data are not available.

Chart 43d - Former worker medical screening programs for DOE building trades workers, Hanford, Savannah River, and Oak Ridge, c/o The Center to Protect Workers' Rights, 2002 (unpublished data).